OPIUM USAGE IN NINETEENTH CENTURY THERAPEUTICS

JOHN S. HALLER, JR., PH.D.
Vice Chancellor for Academic Affairs
University of Colorado
Denver, Colorado

OPIUM and its derivatives still relieve pain, but their curative powers are restricted to paralytic ileus, diarrhea, and a few other disorders. This was not always the case as the therapeutic use of the opium poppy (*papaver somniferum*) extends far back into history. The ancient Greek divinities Hypnos (Sleep), Nyx (Night), and Thanatos (Death) were wreathed with the plant. The greatest use of opium as a therapeutic drug occurred, however, during the Victorian era, which marked the culmination of the opium trade with China. This period also witnessed the development of morphia (1816) and a long list of opium alkaloids, leading to their widespread use in patent and proprietary medicines. Honoring the opium poppy with such sobriquets as *Manus Dei* and *Donum Dei*, Victorian physicians described the dried juice of the poppy as the "sheet anchor" of their materia medica. Used and abused by layman, charlatan, and practitioner alike, opium represents one of the most significant—and confusing—epidodes in the history of medicine.[1–4]

SEDATIVE OR STIMULANT

The sedative versus stimulant properties and the modus operandi of opium generated much of the discussion among physicians in the 19th century. To some, opium seemed to act upon the blood by rarefying and increasing its volume, only afterward affecting the brain and nerves; others thought that it acted wholly and directly on the nervous system. William Cullen, in his *Treatise on the Materia Medica* (1808), suggested that opium suspended the motion of the nervous fluid to and from the brain. In achieving this, opium caused "a cessation of all sense of pain or other irritation arising from any part of the system."[5,p.129] In his analysis of the modus operandi, Cullen determined that while the narcotic affected every function of the system, and while it acted universally and directly as a sedative, its effects depended in the last analysis upon the amount of nervous energy in the brain.[5,pp.125–26] This meant that although a sedative, opium's initial effect in certain individuals

was as an exhilarant. In most instances, Cullen considered the stimulant property or "intermediate state of ebriety" as pernicious and, except when opium was employed as a sudorific, this stimulation delayed the real therapeutic value of the drug. "Everybody knows," he wrote, that opium is "the most effectual of all sudorifics. This, by some, may be ascribed entirely to its stimulant powers; but it is highly probable that the sedative power, concurring at the same time, by relaxing the extreme vessels, renders the sweating a more certain effect, and more considerable in degree."[5,pp.131–32]

Cullen's theory did not go unchallenged. In 1791 Hast Handy reported on the properties of opium to the College of Physicians of Philadelphia, concluding that opium acted in every case as a stimulant, producing "vigour of body" and clearness of mind, exciting the passions, inspiring resolution, and causing giddiness, redness of the face, troublesome dreams, and dilation of the pupils. If the intake was injudiciously large, opium also caused imperfect speech, a full pulse, quickened breath, nausea, vomiting, madness, syncope, and even death.[6]

In Handy's opinion, opium affected the body in a variety of ways. While it brought soothing relief to those who suffered from pain and debility, the opposite was true in inflammatory diseases, where it increased pain unless given in doses large enough to produce "indirect debility." Opium also produced sleep through its stimulant effects. This was evident, Handy reasoned, from its effects on the wakefulness that accompanied asthenic diseases which reduced the system below "the sleeping point." In addition, opium increased the action and frequency of the pulse, encouraged a greater discharge of urine, promoted appetite, helped digestion, and induced perspiration. These sudorific properties, he argued, resulted from opium's influence on the system rather than any curative effect over disease. "Perhaps more benefit would arise from its use," he suggested, "if this vigour could be communicated to the system, without being accompanied by large and weakening discharges from the skin."[6]

Handy recommended the stimulant properties of opium for debilitating diseases, "or those in which the excitement of the system is reduced below its healthy standard," such as spasm, dyspepsia, violent hysteria, hypochondriasis, dropsy, tetanus, typhus, and venereal disease. For these diseases he advised administering opium in small doses, increasing gradually "until the strength of the system can be supported by the customary natural stimuli." Because of its stimulant qualities, Handy warned against using opium in phrenitis, pleuritis, angina, peripneumonia, hepatitis, or any asthenic disease known for its "great heat." In all instances he urged physicians to adjust

dosages on the strength of the pulse, which he identified as "the dialplate of the system in disease."[6]

Medical opinion obviously divided on the modus operandi of opium. While John Brown[7] and Erasmus Darwin[8] described opium as a stimulant, and William Cullen identified it as the best of sedatives, George Young[9] thought it was both a stimulant and a sedative. Samuel Crumpe held that opium acted as a stimulant whose action over the system became perceptible almost immediately through increased pulse and body heat, perspiration, exhilaration of the mind, and "the delirium of intoxication." After a period of stimulating activity, the subject became exhausted, and stupor, tremors, and other debility ensued. Like Handy before him, Crumpe interpreted these latter effects as independent of the drug's therapeutic value.[10,p.124–27] On the basis of its initial effects, Crumpe placed opium, along with electric shocks, wine, and spirit of hartshorn among the most powerful stimulants in the materia medica.[10,p.340]

In contrast to Crumpe, surgeon Michael Ward of the Manchester Infirmary reported that opium acted as a sedative only, and was unwilling to accept even the compromise hypothesis that opium acted as both sedative and stimulant. "In whatever proportion opium is applied to the bodies of animals," he wrote, "the effects are the same in kind, differing only in degree."[10,p.343] For Ward, the important thing was not to define the effects of opium simply by changes in the vital functions immediately upon ingestion, but rather by understanding its effects on the vital functions over a period of time. While the pulsations of the heart and arteries might be quicker and stronger in the beginning, they eventually became slow and laborious.[10,p.130–31]

In a series of experiments first performed by Alexander Monro in 1754 on frogs, and later duplicated by Ward on his own servant as well as upon frogs, rabbits, and dogs, Ward presented evidence that external applications of opium directly diminished heart beat and produced immobility and total insensibility. On the basis of these experiments, Ward contended that Crumpe's stimulant theory was entirely useless in guiding physicians as to the administration of opium. To regulate one's professional conduct by Crumpe's theory was to forfeit "all claim to consistency." If a physician used opium as a stimulant, then, argued Ward, he "is highly culpable...for having recommended it in diseases where stimulants are inadmissible." To prescribe opium in cases of diarrhea, cholera, pneumonia, pleuritis, and phthisis was therefore contrary to sound therapeutic theory.[10,p.389]

In a series of articles published between 1799 and 1803 in the *London Medical and Physical Journal*, Ward recommended opium applied exter-

nally, to be absorbed by the lymphatic system. The method, which he attributed to Francesco Chiarenti of the St. Boniface Hospital in Florence, consisted of mixing six grains of opium with an ounce of lard, and rubbing the lotion on the inside of the legs, thighs, and toes. He recommended that the dosage be increased gradually to 35 grains, applied several times over a period of 48 hours. When absorbed by the lymphatics, opium not only prevented spasms, but produced effects "where the exhibition of it internally had not the same salutary operation." Because the new mode of treatment proved so successful when internal application had failed, Ward suggested that the difference was due to absorption.[11] Introduced into the system through "the medium of the absorbents," opium was "conveyed by the lymphatics to the thoracic duct, and being there mixed with the chyle and lymph, pass[ed] with them into the subclavian vein, and from thence to the heart, the brain, and every part of the body." According to Ward, external applications offered a more direct way to introduce opium into the system since it had only to pass through the lymphatic vessels on its way to the heart.[10,p.356–58]

Though it could be argued that the modus operandi must be the same for internal and external applications, Ward believed that experience, "the only true test by which to try every hypothesis, seems at variance with this."[11] Physicians whose patients were afflicted with spasmodic or convulsive diseases, particularly hydrophobia and tetanus, and who were unable to consume medicines orally, utilized Ward's new approach. "I have reason to believe opium acts more directly and simply as a sedative, when applied externally," concluded Ward, "than when given internally; and I think it is principally, if not entirely, owing to this difference in the modus operandi, that the superior advantages of applying it externally, in certain cases are to be attributed."[12] Ward also suggested external absorption for individuals suffering severe headache, painful menstruation, chronic rheumatism, lumbago, and sciatica. Here, too, he rubbed the ointment on the inside of the legs, thighs and toes.[11] The only real question which the new procedure left unanswered was just what medium could best carry the opium into the system. While lard remained the most popular agent, Ward also recommended egg yolk, olive oil, Neats' foot oil, and camphor.[13]

Although Ward believed that his experiments had been conclusive, he feared that the number of physicians who held to the Brunonian stimulant system threatened to undermine the true meaning of the words "stimulant" and "sedative." The medical profession had employed the terms indis-

criminately to substances whose nature and mode of operating were totally dissimilar.[10,p.343–44] Hoping that the profession would settle upon his own definitions, Ward identified stimulants as substances or powers which "*increase* the contractility of the muscular fibres locally or universally," and sedatives as substances or powers which diminished it. If these definitions were applied to alcohol, volatile alkali, ether, opium, camphor, and other similar drugs, Ward concluded that they would be forever excluded from the list of stimulants.[10,p.348]

But Ward's experiments did not receive the acclaim he had hoped. In 1803, in the *London Medical and Physical Journal*, physician George Nesse Hill challenged his assertions, supporting the views of Ward's adversary Crumpe.[14] Similarly, Alabama physician James Conquest Cross, in the *Transylvania Journal of Medicine* in 1828, argued that opium caused "diametrically opposite characters" when given in different doses. A moderate dose provoked "sudden excitation of the functions," which continued for an indefinite length of time until the system returned to its natural grade of action "without having sustained any diminution of vital energy." On the other hand, an immoderately large dose created a brief state of excitement, which deteriorated quickly into exhaustion, and, in some cases, to the point where life functions were "placed in a situation of peril which cannot always be averted."[15]

In an article written in the *Western Journal of Medicine and Surgery* in 1853, physician Edward Cooke reported the use of opium in acute inflammation, a remedy which he attributed to Alonzo Clark of New York. While others had used opium in combination with the lancet, calomel, and other agents in inflammatory diseases, Clark trusted opium alone. Cooke indicated that much of the difficulty in treating inflammatory diseases arose from the variety of ideas regarding the pathology of inflammation. John Hunter, William Cullen, Jacob Henle, and Wilson Philip, for example, maintained that the real centers of the inflammatory process were the capillary vessels. Benjamin Travers, on the contrary, believed that all the tissues were implicated in the disease, Justus Liebig thought the "diseased tissues undergo an unnaturally rapid oxidation," while Dewitt held that the organic cell was the main culprit.[16]

According to Cooke, all of these theories were of little value. The most important factor in inflammation was that it began with irritation and "that irritation results from some unnatural or immoderate impression made upon the nerves." Hence, in inflammation, irritating the nerves resulted in "the

irritation being propagated to the blood-vessels through the medium of numberless threads which these nerves send out to all parts of the body.'' The inferences drawn from this principle were significant for Cooke.

> If debility of its fine threads (the sympathetic) be a sufficient cause to throw into dissonant action the heart and the arteries in some cases, should we not be inclined to abandon the practice which rests on depletion, counter-irritation, and treatment of this kind, and substitute in their places remedies and a regime which may fortify and soothe the nerve? If dropsy, for instance, be caused by an obstruction of the portal system, and if this obstruction be owing to debility dependent on an atonic condition of the nervous system, would it not be unscientific to harass and exhaust our patients with hydragogue cathartics and wasting diuretics? Or should we, as is our aim in neuralgia, endeavor to restore to the nerves their accustomed tone, and again bring into healthful action their disordered functions? Some few have contended that the tone of the nerve once impaired could not be restored. Such have not benefited by the actions of strychnia in lead-paralysis, and of the carbonates of iron and potash in neuralgia. This view of the supposed disturbed functions of the sympathetic is strengthened, somewhat, by the analogous actions of strychnia and the galvanic current upon the disorders of certain organs exclusively under the control of this system, both as regards the kind of power action upon the nerves, and its influence upon this particular system of nerves. If, then, *inflammation* be caused by influences acting primarily upon the nerves, irritation being the connecting link, should the employment of remedies calculated to soothe the nerves and quiet the irritation, be considered empirical?[16,pp.286–87]

Cooke claimed that it was not his intention to deny the ''humoral pathologist's'' view of fever. Indeed, he reminded his colleagues that fever was indeed a ''blood disease;'' nevertheless, it was also something more since fever first affected the nervous system. For that reason, he argued, physicians should rely on opium to the exclusion of all other remedies during the formative stage of the inflammatory disease, particularly since it acted to quiet the irritation which was ''the prop of the disease.'' After the disease became fully developed and the ''blood changed in its qualities,'' then physicians could combine opium with other remedies.[16,pp.290,17] In any event, the administration of opium depended on the condition of the system. When inflammation became fully developed and irritation was succeeded by morbid changes in the vascular system, Cooke advised the application of the lancet to subdue the inflammation, and opium ''administered afterward to prevent its rekindling.'' In both mild and full stages of inflammation, he advised physicians to give opium in heroic doses. If the patient became completely prostrated by inflammation, however, contraindicating the lancet, then Cooke prescribed moderate doses of opium ''to sustain the flagging powers until the morbid action passed off or exhausted its venom.'' In acute inflammation he recommended opium in combination with antimony, calomel, or ipecac.

While they served to "counteract the stimulating effects of the opium," the opiate insured "the constitutional effects of its associated remedies."[16,pp.307–08]

In 1859 physician A. S. Hudson, professor of medical principles and practice at Eora University in Stirling, IL, added to the plethora of therapeutic theory. "Opium is not merely a soothing comforter, beguiling turbulent agitation into reluctant sleep," he wrote, "but it is an instrument of veritable cure." Particularly in cases of gastralgia and contorting colic, he asserted that there was no other drug as sovereign in its beneficence. While bleeding, warm baths, and nauseants would deter these morbid conditions, opium had no rival in its therapeutic charms. Hudson also valued opium in the treatment of chronic ulcers, in "senile gangrene" (cold feet), and local hyperaemia. In these cases opium generated "a gentle warmth" over the system, bringing immediate relief through increased capillary circulation. Similarly, he recommended opium as a substitute for mercury in syphilis, believing that the drug acted more quickly upon the chancres manifested in the disease. He substituted Dover's powder (powder of ipecac and opium) and brandy for mercurials in typhoid fever and, with the same confidence, Dover's powder for purgatives, emetics, antimony, and mercury in phthisis, pneumonia, bronchitis, and other catarrhal affections.[18] As late as the 1890s, physicians followed the direction set by Hudson by prescribing opium for alluvial and marsh fevers for patients unable to tolerate quinine.[19]

Heroic Medicine

Not surprisingly, opium ranked high among the essential drugs of the so-called "heroic school" of medicine. Both Hudson and R. J. Breckinridge, professor of the materia medica and therapeutics at the University of Louisville, suggested that opium had a wider therapeutic application than most other medicines and that physicians could prescribe far larger doses than previously given. As a stimulant, hypnotic, anodyne, antispasmodic, and diaphoretic, opium had proved itself beyond dispute. In heroic doses or combined with ipecac or tartar emetic, however, opium assumed decided antiphlogistic powers which directly diminished and controlled inflammation.[18,20] Accordingly, Breckinridge used heroic doses of opium for excessive pain, "morbid vigilance," diarrhea, peritoneal inflammation, and tetanus.[20] Charles Brackett, M.D., writing in the *Chicago Medical Journal and Examiner* in 1869, ranked opium among the best agents for ulcers, typhoid, and inflammatory diseases. Unlike Hudson, who recommended Dover's powder, Brackett substituted crude opium or morphine, believing it

to be the perfect antiphlogistic agent in the materia medica. He also substituted opium for the lancet to eliminate those "morbid matters or humors" which prostrated the system.[21] In the 1880s and 1890s physicians began using heroic doses for enteritis while H. C. Wood administered it in combination with castor oil in acute peritonitis.[22]

In 1865 Edmund S. F. Arnold, M.D., of New York, published an article in the *Transactions* of the Pennsylvania Medical Society in which he demonstrated that opium was a "compound" drug, containing both stimulating and sedative properties which acted simultaneously on the patient. "I cannot help thinking that incalculable harm has been and is being done," he wrote, "by regarding opium as a simple narcotic." Arnold pointed out that opium was a "highly compound drug containing active principles possessed of different properties," partly sedative and partly stimulant.[23]

While Arnold contended that the systematic nervous system was the "special minister to the functions of organic life," he argued that through the medium of the blood, opium affected the nervous system and the vital powers. When the system suffered shock or hemorrhage, the patient could be revived with opium administered "at short intervals in moderately full doses." Arnold prescribed opium for injuries; its sedative effects allayed pain and equalized circulation. In cases of sthentic inflammation and "constitutional irritation" when opium was used to free the capillaries and equalize the general circulation of the body, he cautioned that care be taken that the patient was sufficiently bled first. If the body was not depleted, opium acted as a deleterious stimulant intensifying the general excitement already present, sending blood to the part which was "already over-supplied and unable to dispose of it." Accordingly, when opium was administered as an antiphlogistic, Arnold advised physicians to bleed the patient "to the verge of syncope, thereby not only diverting action and unloading the over-filled vessels of the inflamed part, but so placing the patient that, while the stimulant properties act beneficially in bringing the vital energies up to their normal standard, its sedative properties may be brought directly into play, controlling future action in a manner such as no other single sedative or narcotic remedy can accomplish."[23]

Although physicians in the late century warned against the use of opium in respiratory diseases, many chose to prescribe it for pneumonia, pleurisy, and general inflammations of the lung tissues. The success of opium treatments in peritonitis led some physicians to expect similar results in inflammations of other serous membranes. As a result, physicians prescribed it in combination with calomel, antimony, or ipecac to relieve the congestion of the lungs.[24]

According to L. L. Todd, M.D., of Indiana, opium had no equal as a febrifuge. Its control over circulation enabled it to relieve local congestions while at the same time acting as a sedative to the heart and arteries, "filling the capillaries, promoting perspiration, thereby lessening temperature, and last, but not least...procuring sleep." In inflammations of the chest and abdomen, Todd prescribed opium in heroic doses, often repeated, to the "utmost extent of the vital toleration, until it conquer[ed] an enemy that could rarely be met successfully." Physicians also prescribed opium in low-grade fevers such as typhus, typhoid fever, and typhoid-pneumonia in which the patient labored "under the effects of a blood poison which [was] being slowly eliminated from the body by its natural emunctories."[25]

While some physicians favored opium as a parturient instead of ergot in the 1870s, others objected strenuously to its use. One physician, writing in the *New Orleans Journal of Medicine* in 1870, cited cases in which opium had retarded labor and caused a suspension of the mucous discharge essential to natural childbirth.[26] Others objected to its use in parturition and lactation because it caused hemorrhage. Since opium often acted as a stimulant, they feared its use would encourage rather than retard uterine hemorrhage.[27,28] Confusion likewise occurred among physicians who considered opium an astringent in diarrhea and those who prescribed it as a laxative.[29,30] Probably the most unusual use of opium was recommended to the Medical and Surgical Society of New Orleans in 1879 by B. A. Pope, M.D., who prescribed it to treat masturbation.[31] Others identified opium as an aphrodisiac and prescribed it as a "sweet restorer," after the "general malaise of a debauch."[32]

OPIUM FOR CHILDREN

Of those physicians recommending external applications of opium, many favored its use in inflammatory diseases of children. Some regularly applied heroic doses of calomel internally and opium liniment externally for bronchitis and other forms of "capillary congestions." Indeed, one physician suggested opium liniment as a substitute for leeching, blistering, and bloodletting, since depletion acted in a deleterious manner upon children's constitutions and all too often changed their temperament.[33] In 1858 physician Thomas Pollard of Virginia argued that unwarranted objections had been made to the dangers of mercury, blisters, tarter emetic, and opium in diseases of children; but such remedial agents, cautiously prescribed and carefully observed, were as important in infant therapeutics as in diseases of adults. The child's brain, he observed, received more blood than the adult's, and was therefore prone to greater congestion; because the child's system was en-

dowed with more susceptibility and irritability than the adult's, the "composing effect of opium" was imperatively demanded.[34] Physicians typically gave a drop of laudanum for every month of the child's age under a year. Advocates of opium for infants reiterated the need for expert skill and diagnosis, and accused reluctant physicians of suffering from homeopathic delusions.[18,35]

One of the earliest warnings on the use of opium in diseases of infants came from John B. Beck, M.D., professor of materia medica and medical jurisprudence at the College of Physicians and Surgeons in New York. In 1844 Beck pointed out that physicians and parents were administering paregoric, laudanum, syrup of poppies, Dover's powder, elixir paregoric, Dalby's Carminative, and Godfrey's Cordial without realizing that opiates acted with "much greater energy" and more uncertainty upon an infant.[36] No sooner was a baby born than he was fed Atkinson's Infants' Preservative, and when he suffered from indigestion and cried he was immediately drugged with soothing syrups and paregoric. If he ventured to cough, he received Holt's Specific for Whooping Cough, or squills or antimony, and when he began cutting teeth he received Professor Garretson's toothache drops or Steedman's Teething Powders; in between, he was given castor oil and calomel; and if he survived these regimes, he was then fed cod liver oil with iron and quinine to encourage a long life.[37–40]

Nearly every physician could point to cases of a careless mother or nurse who, in order to obtain a good night's rest, fed their charges paregoric, teething cordials, and other "quieters."[41,42] Working women gave anodynes to immobilize their children while they were out of the home. Youthful mothers who refused to forego the pleasures of night life were accused of feeding laudanum or paregoric to their children. One physician recalled a mother who had fed her four-month-old infant six to eight drams of laudanum daily.[43]

The most popular children's opiate was Mrs. Winslow's Soothing Syrup, advertised as producing "natural sleep." Druggists sold some three quarters of a million bottles annually in the United States, each containing a grain of morphia to the ounce. The effects of the syrup were discussed in articles and warnings published in medical journals. Mothers unaware that the syrup contained morphia gave the mixture to their children to regulate their bowels, to soothe them during teething, or just to calm their crying. Babies no more than two weeks old were fed teaspoonfuls of the syrup with frightful results. Physicians reported finding children with "shocking disfigured appearances," with aged faces, and shriveled skin.[44–46]

OPIUM ADDICTION

Most of the opium supplied to the United States came from Turkey, although a considerable amount was also imported from India and Egypt. A quantity was also produced in the New England states, California, and Arizona and shipped to Philadelphia where it was manufactured into morphine.[47] The amount imported from 1850 to 1877 (5,299,774 pounds of opium and 22,656 ounces of morphine) suggested an increase in quantity of 493% while the population increased during the same period only 78.6% (see Table I).[47] This did not include morphia imports and opium brought in by smuggling. The pharmaceutical manufacturer E. R. Squibb of Brooklyn estimated that 20% of this amount covered the legitimate therapeutical purposes prescribed by members of the medical profession.[48] This included the most commonly used powdered opium, denarcotized opium, extract of opium, Dover's Powder, tincture of opium (laudanum), vinegar of opium or black drops, deodorized tincture of opium, Tully's Powder, sulphate and muriate of morphine, codeine, svapnia, and McMunn's Elixir.[49] The remainder fell into the hands of nostrum manufacturers and the estimated 200,000 opium inebriates in the country.[48]

Physicians were to blame for much of the opium addiction, having prescribed opium and then allowing patients, through carelessness or inattention, to seek refills from the druggist at their own discretion. Indeed, J. B. Mattison, M.D., of Brooklyn attributed almost four fifths of the opium cases he reviewed to the reckless use of Gross's neuralgia pills or Brown-Sequard's neuralgia pills for the relief of pain, insomnia, and general nervousness, and the lack of careful scrutiny regarding refills.[48,50]

Neurotic patients prone to pain and nervousness from the most trivial causes found themselves easy victims. Other potential addicts included the sufferers of rheumatism, chronic diarrhea, asthma, bronchitis, consumption, palsy, fractures, and diseases peculiar to women. According to F. M. Hamlin, M.D., of New York, "the tremendous strife, the hurry and bustle of our present civilization with the constant demands upon our energies and nervous systems, are constantly augmenting this class of neurotics." Common among the remedies used for these problems were opium, morphine, Dover's powder, laudanum, and paregoric, along with a host of patent and proprietary medicines which also contained opium.[51]

Many of the nostrums advertised to relieve painful conditions such as neuralgia, rheumatism, and gout or as tonics had either opium or alcohol as their base. Patients who were total abstainers, temperance advocates, and

TABLE I. STATEMENT OF IMPORTS INTO THE UNITED STATES OF OPIUM AND MORPHINE DURING THE FISCAL YEARS 1850 TO 1877, INCLUSIVE.

Fiscal years ended June 30	*Opium*		*Morphine and salts of opium*	
	Pounds	*Dollars*	*Ounces*	*Dollars*
1850	130,349	362,605		
1851	40,885	94,815		
1852	42,134	128,695		
1853	131,370	346,643		
1854	108,178	270,627		
1855	111,229	407,683		
1856	157,814	485,846		
1858	135,915	447,534		
1859	71,839	304,910		
1860	119,525	540,543		
1861	109,536	427,793	12	35
1862	194,844	651,181	1,137	2,677
1863	62,618	266,553	195	604
		290,872*		
1864	113,699	653,158	71	171
1865	142,708	668,039	172	421
1866	192,196	705,799	2,098	4,230
1867	185,856	857,047	941	2,255
		40,022+		
1868	216,447	1,010,650	62	135#
1869	157,182	1,086,572	1,485	9,192#
1870	254,600	1,776,908	3,188	15,613#
1871	315,121	1,926,915	237	1,066#
1872	416,864	2,107,341	240	701#
1873	319,134	1,978,502	580	1,702#
1874	395,909	2,540,228	1,309	4,349#
1875	305,136	2,037,793	4,252	13,102#
1876	388,311	1,805,906	3,285	9,097#
1877	319,223	1,788,347	3,403	8,083#
Total	5,299,774	26,472,979	22,656	73,433

Prepared by E. Young, Chief of the Bureau of Statistics in the United States Treasury Department
*Opium prepared for smoking
+Extract of opium
#Home consumption

prohibitionists found themselves "doctored" with alcohol for neuritis. One physician recalled a retired clergyman and temperance advocate who suffered chronic alcoholism after using the patent medicine Balm of Gilead, which was 70% alcohol. Another physician remembered a young woman who became addicted to the morphine in Feeley's Rheumatic Mixture. She consumed more than 1,000 bottles of the nostrum, taking the equivalent of 6,000 grains of morphia.[52]

Physicians quickly recognized their culpability for this abuse. "I am convinced that *we* are responsible, in some measure, in a large proportion of cases, for the evil," wrote J. S. Weatherly, M.D., of Montgomery, AL. "I fear that the majority of physicians prescribe Opium far too frequently, and for causes too slight to require a remedy that is so powerful...in its effects. And too often we find that our patients do not consult us when they wish it, but prescribe it for themselves."[53] While physicians were responsible for many cases of opium addiction, they were usually aware of it only through their acquaintance with the local druggist. Pharmacists, either from fear of loss of trade or to protect the confidentiality of business relations, were typically unwilling to provide much information.

Nevertheless, data were available from other sources. In Michigan, for example, O. Marshall of the State Board of Health sent 200 circulars to prominent physicians throughout the state seeking information on the local opium-habit. Excluding the larger cities of Detroit, Grand Rapids, and East Saginaw, which were not part of the survey, the Board received 96 replies. Of the 1,313 opium eaters in the Michigan report, 803 were female and 510 male. Based on the statistics, physicians estimated that the total number of opium eaters in Michigan approximated 7,763 in a population of 1,334,031. In his analysis of the data, Marshall determined that opium eaters took the drug in three principal forms: crude or gum opium, sulphate of morphia (morphine), and tincture of opium. In some instances, habitues consumed McMunn's Elixir, an extract of opium with the approximate strength of laudanum. The findings also showed that opium inebriates did not confine themselves to a single form; rather, they relied on alcohol, chloral, and chloroform to accentuate their addictive habits.[47]

Inquiries made by Charles W. Earle, M.D., at 50 drug stores in Chicago in 1890 indicated some 235 habitual opium eaters, 169 of them women. Of the women, one third were prostitutes; the rest were from the middle and upper classes and generally of "superior culture and refinement." Of the men, Earle found an increasing number of addicts among members of the medical profession. As for the breakdown by age, Earle provided the information in Table II.[54]

Women in the Chicago survey typically used morphia while men in the lower socioeconomic groups took gum opium. When desiring alcoholic stimulants in addition, both sexes used the tincture and occasionally paregoric. One druggist reported a woman of 50 who purchased a half gallon of paregoric every week. Table III represents the breakdown of these preparations (Table III).[54]

TABLE II. AGE OF ADDICTS

Males	
From 20 to 30 years	5
From 30 to 40 years	19
From 40 to 50 years	11
From 50 to 60 years	7
From 60 to 70 years	1
From 70 to 80 years	1
Unknown	22
Total	66
Females	
From 10 to 20 years	2
From 20 to 30 years	18
From 30 to 40 years	39
From 40 to 50 years	23
From 50 to 60 years	14
From 60 to 70 years	4
One third entire number prostitutes, probably from 15 to 50	56
Unknown age	14
Total	169

TABLE III. USAGE LEVELS OF MOST POPULAR OPIATES

Morphia	120	cases
Tincture of opium	30	
McMunn's Elixir	2	
Paregoric	5	
Gum opium	50	
Dover's powder	1	
Unknown	27	
Total	235	

OPIUMANIA CURES

Cures or antidotes for the opium habit added to the consumption of opium. Vendors of opium "cures" promised relief following the purchase of a "full course" (several months' supply) of medicine. The addict was asked to give his daily or weekly opium intake so that the vendor could prepare the appropriate cure. The vendor then prepared on opiate in the same strength and the addict continued his addiction under the guise of the cure. When the patient became accustomed to the "cure," the vendor provided him with a new supply, lessening the amount of opium each succeeding month. Typically, addicts moved from one vendor to another in their search for a cure.[55]

Opium antidotes were sold through the mail as well as in drug stores, and represented one of the worst aspects of the opium trade in America. Analyses of such antidotes showed as much as 25 grains or more of the drug per ounce of solution. In 1886 B. F. Davenport, state analyst of the Massachusetts State Board of Health, reported that of 20 so-called opium cures, all contained morphine, except Keeley's Double Chloride of Gold Cure, which contained neither opium nor gold.[55] Some of the more notorious vendors included S. B. Collins, Mrs. J. A. Drollinger, L. Meeker, Bowser, and Squire of Indiana; Beck and Wilford from Ohio; Carlton and Phelon from Illinois; and Marsh from Michigan. Each of the vendors, who fleeced their patients of 25 to 35 dollars a month, assured their addicted clients that their antidote contained no opium.[56]

One of the more notorious vendors was John Crofton Beck, a graduate of the Medical College of Ohio in 1848, professor at the Cincinnati College of Medicine and Surgery in 1858, and editor of the *Cincinnati Medical and Surgical News*. Beck established offices at No. 112 John Street in Cincinnati and, girded with testimonials from the medical profession, set out to capture the imagination of addicts with solemn oaths of cure. Dr. Beck's Opiumania Cure teased the diseased appetite by feeding it. Requesting that the addict provide information on the type, amount, and frequency of intake of opium, Beck then perpetuated the habit by providing the patient with a four-ounce vial of "cure" (at twice the cost of the original habit).[57]

CONCLUSION

Not surprisingly, opium became both a blessing and a curse to the medical profession in the 19th century. Confused by its actual *modus operandi*, physicians found themselves treating patients for a host of problems without fully understanding how and in what manner the drug acted on the system. Seen by many as their "sheet anchor" in the materia medica, opium became overused as physicians were too supportive of its application and too uncritical of its effects. Patients found opium and its derivatives easily obtainable, with or without a prescription, and were quick to discover its soothing and exhiliarating effects. Opium abuse—whether intended or accidental—became the scourge of 19th century society. Physicians who had once proudly proclaimed opium's therapeutic charms discovered all too quickly that it reduced many patients to thralldom. As the poem "The Opium-Eater," published in the *Atlanta Constitution* in 1878 noted:

> In the poisoned dregs on the hideous cup
> I have drained so long. And the light of day

Has shown its last on my lonely way;
And the hopes of youth that lingered there
Have given place to a dark despair.
For the poppy wine, with its cursed spell,
Is dragging me down to a lasting hell.

REFERENCES

1. Wright, A. D.: The history of opium. *Med. Bio. Illustrated 18*:62-70, 1968.
2. Sigerist, H. E.: Laudanum in the works of Paracelsus. *Bull. Hist. Med. 9*:530-44, 1941.
3. Sandwith, F. M.: Drugs, old and new. *Med. Mag. 22*:330-36, 1913.
4. Kritikos, P. G. and Papadaki, S. P.: The history of the poppy and of opium and their expansion in antiquity in the eastern Mediterranean area. *Bull. Narcotics 19*:5-10, 17-38, 1967.
5. Cullen, W.: *Treatise on the Materia Medica*. Philadelphia, Carey, 1808.
6. Handy, H.: *An Inaugural Dissertation on Opium*. Philadelphia, Lang, 1791.
7. Brown, J.: *The Elements of Medicine*. Philadelphia, Bartram, 1806, Vol. 1, p. 104.
8. Darwin, E.: *Zoonomia; Or the Laws of Organic Life*. Philadelphia, Dobson, 1797, Vol. 1, pp. 80-81, 364.
9. Young, G.: *A Treatise on Opium, Founded Upon Practical Observations*. London, Millar, 1753, pp. 33, 47.
10. Ward, M.: Observations on the modus operandi of opium. *London Med. Phys. J. 7*:124-37, 341-60, 497-506, 1802; *8*:325-48, 388-90, 1802.
11. Ward, M.: Facts and observations relative to the external application of opium by friction, so as to be absorbed by the lymphatics. *London Med. Phys. J. 1*:441-49, 1799.
12. Ward, M.: Observations on the effects of opium applied externally. *London Med. Phys. J. 6*:478-86, 1801.
13. Ward, M.: Additional facts and observations relative to opium applied externally, so as to be absorbed by the lymphatics. *London Med. Phys. J. 2*:6-9, 1799.
14. Hill, G. N.: Remarks on reading Mr. Ward's theory of the modus operandi of opium. *London Med. Phys. J. 9*:153-57, 1803.
15. Cross, J. C.: An essay on poisoning by opium. *Transylvania J. Med. 11*: 453-84, 1828.
16. Cooke, E.: Opium in acute inflammations. *West. J. Med. 11*:281-308, 1853.
17. Frost, C. P.: Opium: its uses and abuses. *Trans. Vermont State Med. Soc.*: 131-37, 1869-70.
18. Hudson, A. S.: Opium: Its influence in febrile, inflammatory and other diseases. *Trans. Illinois State Med. Soc.*:125-44, 1859.
19. Mouat, F. J.: The ethics of opium and alcohol. *Lancet 1*:959-61, 1152-54, 1090-92, 1892.
20. Breckinridge, R. J.: Opium in larger doses. *Semi Month. Med. News 1*:32-37, 1859.
21. Brackett, C.: On the uses of opium. *Chicago Med. J. Exam. 17*:127-30, 1860.
22. Wood, H. C.: Opium. *Boston Med. Surg. J. 128*:637-41, 1893.
23. Arnold, E. S. F.: On the uses of opium in shock, reaction, and inflammations. *Trans. Med. Soc. State Penna. 1*:183-206, 1865.
24. Frost, C. P.: Opium; its uses and abuses. *Trans. Vermont State Med. Soc.*: 131-47, 1869-70.
25. Todd, L. L.: The therapeutic properties of opium. *Trans. Indiana State Med. Soc. 27*:79-87, 1877.
26. Comings, F. W.: Opium: its uses and abuses. *Trans. Vermont State Med. Soc.*:357-71, 1895-96.
27. Bass, J. D.: Opium as a parturient. *New Orleans J. Med. 23*:109-12, 1870.
28. Bennett, T. J.: The relations of opium to the state of gestation, parturition, and lactation. *Richmond Louisville Med. J. 14*:703-07, 1872.
29. Littlejohn, S. G.: Opium as a laxative. *Practitioner 18*:10-14, 1877.
30. Francis, C. R.: On the value and use of

opium. *Med. Times Gaz. 1*:87-89, 116-17, 1882.
31. Pope, B. A.: Opium as a tonic and alterative; with remarks upon the hypodermic use of the sulphate of morphia, and its use in the debility and amaurosis consequent upon onanism. *New Orleans Med. Surg. J. 6*:715-28, 1879.
32. Mattison, J. B.: The genesis of opium addiction. *Am. Lancet 7*:303-04, 1883-84.
33. Bow, W. F.: On the beneficial effects of the external appliction of opium in inflammatory diseases. *London Med. Phys. J. 11*:23-29, 1831.
34. Pollard, T.: Use of opium in children. *Atlanta Med. Surg. J. 4*:129, 1858.
35. Griffith, J. P. C.: The place of opium in the therapeutics of infancy and childhood. *Penninsular Med. J. 21*:497-502, 1918.
36. Beck, J. B.: On the effect of opium in the infant subject. *N.Y. J. Med. 2*:7-13, 1844.
37. Woodbury, F.: Physic-tippling and medicine-bibbing—a warning against intemperance in the use of drugs. *Report Board Health Penna. 2*:286-90, 1887.
38. Miller, C. H.: A case of poisoning from a well-known toothache preparation. *Southern Clin. 5*:432-35, 1882.
39. Bogess, W. F.: Enormous doses of laudanum taken by an infant. *Arch. Pediatr. 16*:358-61. 1899.
40. Jacobi, A.: Opium and its alkaloids in the young. *Therap. Med. 24*:1-4, 1910.
41. Fisher, L.: The opium habit in children. *Med. Rec. N. Y. 45*:197-99, 1894.
42. Wyma: Opium-eating teetotallers. *J. Psych. Med. Mental Pathol. 7*:75-76, 1881.
43. Booth, J. M.: Toleration of opium in the infant. *Br. Med. J. 2*:775, 1880.
44. Hall, M.: The effects of the habit of giving opiates on the infantine constitution. *Edinburg Med. Surg. J. 7*:423-28, 1816.
45. McNutt, W. F.: Mrs. Winslow's soothing syrup—a poison. *Pacific Med. Surg. J. 10*:504-06, 1872.
46. Hirsch, A. B.: Notes on a case of poisoning from Mrs. Winslow's soothing syrup. *Lancet-Clin. 8*:654-56, 1884.
47. Marshall, O.: The opium habit in Michigan. *Report Board Health Michigan, Lansing 6*:61-73, 1878.
48. Mattison, J. B.: Opium inebriety. *Trans. Med. Soc. N. J.*:170-79, 1878.
49. Comings, F. W.: Opium: its uses and abuses. *Trans. Vermont State Med. Soc.*:359-71, 1895-96.
50. Mattison, J. B.: The responsibility of the profession in the production of opium inebriety. *Med. Surg. Reporter 38*: 101-04, 1878.
51. Hamlin, F. M.: The opium habit. *Med. Gaz. 9*:426-31. 1882.
52. Mason, L. D.: Patent and proprietary medicines as the cause of the alcohol and opium habit or other forms of narcomania—with some suggestions as to how the evil may be remedied. *Quart. J. Inebriety 25*:1-13, 1903.
53. Weatherly, J. S.: Increase of the habit of opium-eating. *Trans. Med. Assoc. Alabama.*:67-69, 1869.
54. Earle, C. W.: The opium habit. *Chic. Med. Rev. 2*:442-46, 1880.
55. Mattison, J. B.: Opium antidotes and their vendors. *J.A.M.A. 7*:568-70, 1886.
56. Mattison, J. B.: An expose of opium antidotes. *Atlanta Med. Surg. J. 15*:216-18, 1877-78.
57. Chaille, S. E.: The opium habit, and opium-mania cures. *New Orleans Med. Surg. J. 3*:767-75, 1876.